Withdrawal of the rejection of claims 14-16 and 30-32 under 35 U.S.C. § 112 is requested. Claims 14-16, and 30-32 are now cancelled.

Withdrawal of the rejection of claims 1, 2, 5, 7 and 25 under 35 U.S.C. § 102(b) anticipated by Furuya (U.S. Pat. No. 5,577,087) is requested. Claim 1 has been amended to include the subject matter of claim 18, previously indicated to be allowable. Accordingly, withdrawal of the rejection to claim 1 and those dependent thereon is requested.

Favorable consideration of new claims 36-73 in view of Furuya is requested. The newly submitted claims are directed to a system of communication which uses two modulation techniques. A second modulation signal is regularly inserted to the signal from a first modulation system to act as a pilot signal. The pilot signal in turn is used to estimate a frequency offset and transmission path distortion which is necessary to demodulate the first modulation signal.

In the corresponding receiver for the method and apparatus in accordance with the invention, the two interleaved modulation signals are demodulated, and the distortion estimation signal and a frequency estimation signal are used by the receiver for reception of the two signals.

In viewing the Furuya reference, there does not appear to be any system which relies on generating two modulation signals, and using the second modulation signal as a pilot signal for the first modulation signal. Instead, the Furuya reference is directed to the system for controlling a multi-level modulation scheme depending on a detected transmission quality. As the transmission quality decreases, the system changes to a modulation scheme having a smaller number of levels, and a transmission time is increased correspondingly. It is submitted that the foregoing technique for changing between modulation levels depending on the transmission quality is not suggestive of the present invention.

Withdrawal of the rejection of claims 4, 6, 8-12, 14,16, 26-28 and 30-32 under 35 U.S.C. § 103(a), as being unpatentable over Furuya is requested. As the foregoing claims

have been either cancelled or amended to include the subject matter of allowable claim 18, the claims are otherwise considered to be allowable.

Withdrawal of the rejection of claims 13 and 29 under 35 U.S.C. § 103(a) as being unpatentable over Furuya further in view of Marchetto et al. (U.S. Pat. No. 5,914,959) is requested. Claims 13 and 29 are now cancelled.

Withdrawal of the rejection claim 17, and 19-24 under 35 U.S.C. § 103(a) as being unpatentable over Furuya and further in view of Wong (U.S. Pat. No. 5,027,.372) is requested. The foregoing claims have been cancelled.

New claims 36-73 are also neither anticipated or rendered obvious by the subject matter of Marchetto et al. (U.S. Pat. No. 5,914,959) or Wong (U.S. Pat. No. 5,027,372). The reference to Marchetto is directed to changing the number of modulation states and bits per symbol in a communication between a paging base station and a mobile paging unit. The system operates when signal reception is below a level that would otherwise be unacceptable. Changing of the data rate to accommodate signal strength conditions is wholly distinct from the subject matter of the newly inserted claims which relies upon a system wherein two modulation signals are generated, each with a different type of modulating system. The presently claimed subject matter introduces one of the modulation signals as a pilot signal. During reception of the signal, a PSK symbol for estimating a frequency offset as well as transmission path distortion are recovered from the interleaved modulation signals to demodulate the first modulation signal. It is submitted that this subject matter is not therefore obvious in light of the Marchetto et al. (U.S. Pat. No. 5,914,959) reference.

The Wong (U.S. Pat. No. 5,027,372) reference describes a differential phase shift keying modulator. Like the other references, there does not appear to be any interleaving of a first multi-value modulated signal with a second modulated signal to provide a pilot symbol for estimating a frequency offset and a transmission path distortion which is used to demodulate the multi-value modulation signal.

In view of the above, consideration and allowance are, therefore, respectfully solicited.

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In the event the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below.

The Director is hereby authorized to charge any fees, or credit any overpayment, associated with this communication, including any extension fees, to CBLH Deposit Account No. 22-0185.

Respectfully submitted,

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# MARKED-UP REVISIONS

## IN THE CLAIMS:

1.      (Amended)  A method for modulation, comprising the steps of:

[periodically and alternately] <u>regularly</u> subjecting an input digital signal to first modulation and second modulation to convert the input digital signal into a pair of a baseband I signal and a baseband Q signal, the first modulation and the second modulation being different from each other; and

outputting the pair of the baseband I signal and the baseband Q signal [.] <u>;</u>

<u>wherein the first modulation is at least 4-signal-point modulation, and the second</u> <u>modulation is phase shift keying;</u>

<u>wherein the phase shift keying provides periodically-spaced symbols which</u> <u>represent corresponding portions of the input digital signal in terms of differences</u> <u>between phases of the periodically-spaced symbols; and</u>

<u>wherein the at least 4-signal-point modulation assigns logic states of the input</u> <u>digital signal to respective signal points for a first symbol in response to a signal point</u> <u>used by a second symbol of the phase shift keying which precedes the first symbol.</u>

3.      (Amended)  A method as recited in claim [2] <u>1</u>, wherein the phase shift keying is quadranture phase shift keying.

5.      (Amended)  A method as recited in claim [2] <u>1</u>, wherein the at least [8] <u>4</u>-signal-point modulation is at least [8] <u>4</u> quadature amplitude modulation.

13.     (Amended)  A method as recited in claim [2] <u>1</u>, wherein a maximum of amplitudes corresponding to signal points of the at least [8] <u>4</u>-signal-point modulation in · an I-Q plane is equal to an amplitude of a signal point of the phase shift keying in the I-Q plane.

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33.    (Amended)  A transmission apparatus comprising:

first means for [periodically and alternately] <u>regularly</u> subjecting an input digital signal to first modulation and second modulation to convert the input digital signal into a pair of a baseband I signal and a baseband Q signal, the first modulation and the second modulation being different from each other, the first modulation being at least 8-signal-point modulation, the second modulation being phase shift keying; and

second means for outputting the pair of the baseband I signal and the baseband Q signal.